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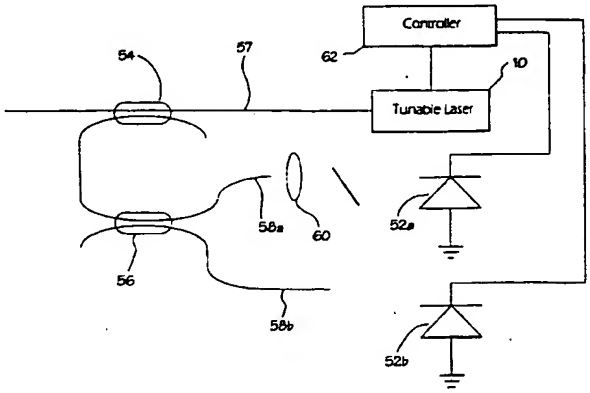
(54) Title: A TUNABLE LASER SOURCE WITH AN INTEGRATED WAVELENGTH MONITOR AND METHOD OF OPERATING SAME



(57) Abstract: IPCavelength monitor is provided based on the transmission response of an optical filter (50). The monitor (52a, 52b) provides feedback to the laser (10) enabling it to lock to any given wavelength within its tuning range. The invention is also a process for integrating the wavelength monitor directly on chip with a variety of tunable semiconductor lasers. The invention also comprises a method for controlling the wavelength of a tunable laser by using a wavelength monitor to measure the output light and provide feedback to a control system (62). The laser and wavelength monitors are integrated together on a single indium phosphide chip. The wavelength monitor comprises a filter (50) with a wavelength dependent transmission function and a pair of detectors (52a, 52b). One detector (52a) is illuminated with light that has passed through the filter and the other provides a reference to measure the input intensity. Taking the ratio of the filtered light level to the unfiltered light provides a wavelength dependent signal. The filter (50) is designed such that the transmission function is monotonic and varies from a minimum at one extent of the laser's tuning range to a maximum at the other extent.

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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H01S3/10 H01S5/026

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 H01S

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, WPI Data, PAJ, IBM-TDB, INSPEC, COMPENDEX

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 97 05679 A (IP JOSEPH ;JDS FITEL INC (CA); COLBOURNE PAUL (CA); TEITELBAUM NEI) 13 February 1997 (1997-02-13) page 1, line 1 -page 1, line 13 page 2, line 28 -page 4, line 20 page 6, line 24 -page 7, line 21; figures 1A-2	1,14
X	MASON B ET AL: "TUNABLE SAMPLED-GRATING DBR LASERS WITH INTEGRATED WAVELENGTH MONITORS" IEEE PHOTONICS TECHNOLOGY LETTERS,US,IEEE INC. NEW YORK, vol. 10, no. 8, 1 August 1998 (1998-08-01), pages 1085-1087, XP000769864 ISSN: 1041-1135 the whole document	1,13,14, 22
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[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
7 September 2000	18/09/2000

Name and mailing address of the ISA	Authorized officer
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INTERNATIONAL SEARCH REPORT

Inter onal Application No
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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

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